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Space, Missile, Command, and Control

***EVALUATION OF AIR TRAFFIC CONTROL
AND LANDING SYSTEMS (ATCALS)***

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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This instruction implements AFPD 13-2, *Air Traffic Control, Airspace, and Range Management*. It establishes responsibilities and procedures for the technical evaluation and optimization of ATCALS and applies to all US Air Force (USAF), National Guard, and Air Force Reserve organizations having responsibility for these systems. It outlines procedures for requesting, scheduling, conducting and documenting ATCALS evaluations. This instruction may be supplemented to facilitate further program implementation. Such supplements may not change the intent of the instruction or add to the reports created. Send comments and suggested improvements to HQ Air Force Flight Standards Agency (HQ AFFSA/XVE), 1535 Command Drive, Suite D309, Andrews AFB, MD 20762-7002.

1. Objective. The ATCALS Evaluation Program provides a capability to systematically test, evaluate, optimize, solve problems, and document performance of selected ATCALS. It does not mandate that all ATCALS be evaluated but prescribes criteria under which selected systems will be evaluated. This capability will concentrate on evaluating those systems and situations with the greatest need as determined by the applicable Major Command (MAJCOM) and HQ Air Force Flight Standards Agency (AFFSA). Identification of capabilities and limitations, optimization, and problem solving on other ATCALS can be accomplished through more conventional means such as carefully documented acceptance tests, commissioning flight inspections, quality control (QC) efforts, or special assistance by special maintenance teams (SMT). Other objectives for the ATCALS Evaluation Program include:

1.1. Develop and maintain an experienced, sophisticated, technical capability to investigate Air Force ATCALS capabilities and limitations, by maintaining a pool of highly skilled (5/7 level) technicians in the air traffic control (ATC) radar maintenance, navigational aids (NAVAIDS), and ground radio career fields.

1.2. Determine the optimum configuration for selected facilities based on equipment capabilities, mission requirements, and environmental conditions.

- 1.3. Identify, evaluate, troubleshoot, solve, recommend solutions, and document problems that affect system performance.
- 1.4. Identify and evaluate equipment deficiencies, siting deficiencies, or propagation anomalies, and provide technical information for follow-on equipment upgrade programs.
- 1.5. Support, per provisions of AFI 63-101, *Acquisition Systems*, and AFI 99-102, *Management of Operational Test and Evaluation*, as technical experts during development of new ATCALs systems.
- 1.6. Assure that evaluation procedures and program procedures are responsive to MAJCOM needs.
- 1.7. Establish and maintain an ATCALs technical library and disseminate evaluation findings to appropriate agencies.
- 1.8. Provide a database to account for past and future ATCALs evaluations.

2. Responsibilities.

2.1. HQ AFFSA ATCALs Evaluation Division (HQ AFFSA/XVE):

- 2.1.1. Direct and monitor the ATCALs evaluation program.
- 2.1.2. Act as focal point for evaluation requests.
- 2.1.3. In August of each year, develop an annual, prioritized list of ATCALs to be evaluated and disseminate annual ATCALs evaluation schedule to all applicable operations and maintenance points of contact covering the following fiscal year. Factors considered are:
 - 2.1.3.1. Priority of MAJCOM requests. **Attachment 2** shows the ATCALs evaluation selection criteria.
 - 2.1.3.2. Justification by requesters, provided on the Request for ATCALs Evaluation.
 - 2.1.3.3. Past reliability and performance of facilities that have been recommended for evaluations.
- 2.1.4. Receive and process follow-on requests for special and baseline evaluations and determine priority.
- 2.1.5. Monitor the activities of each evaluation branch to ensure that they meet MAJCOM requirements.
- 2.1.6. Review evaluation report recommendations and monitor the status of those that require headquarters staff action and action outside HQ AFFSA.
- 2.1.7. Review ATCALs evaluation test procedures, test plans, and report outlines to ensure they meet command needs.
- 2.1.8. Periodically review and correct, with functional managers and the evaluation branch, problem areas and adverse trends.

2.2. MAJCOMs:

- 2.2.1. Establish operations and maintenance points of contact for coordinating ATCALs evaluation matters.

2.2.2. Coordinate with each subordinate base to be evaluated to establish evaluation dates that best fit the overall requirements and minimize interference with operations, taking all activities into account (mobile depot maintenance (MDM), runway construction, prevailing weather, exercises, etc.).

2.2.3. Submit, by 15 July of each year, a list of ATCALs to be evaluated during the next fiscal year to HQ AFFSA/XVE. Include nominations for baseline and special evaluations. The list should be prioritized with narrative justification; i.e., provide reasons why the evaluation is needed. List the requests in order of priority and include:

2.2.3.1. Name of base.

2.2.3.2. Type of evaluation: special or baseline.

2.2.3.3. Type of ATCALs to be evaluated and runways supported.

2.2.3.4. Nomenclature of equipment to be evaluated.

2.2.3.5. Optimum time period for the evaluation to be scheduled.

2.2.3.6. Special items of concern, if appropriate. For special evaluations to investigate problems, describe the problems and provide a summary of requests for assistance and actions taken.

2.2.3.7. The reporting requirement in this paragraph is exempt from licensing with a Report Control Symbol (RCS) in accordance with paragraph 2.11.5 of AFI 37-124, *The Information and Reports (ICR) Program*.

2.2.4. Maintain contact with units considered for evaluations to ensure problems that would adversely affect the evaluation are taken into account and promptly reported to the evaluation branch.

2.2.5. Submit out-of-cycle baseline evaluation requests as needed and special evaluation requests at anytime when ATCALs deficiencies cannot be corrected with local unit, MAJCOM, or other available resources.

2.3. Units requiring or receiving ATCALs evaluations will:

2.3.1. Advise their MAJCOM and/or wing when deficiencies, which are beyond local and MAJCOM capability, occur which would require maintenance assistance, engineering assistance, and/or ATCALs special evaluation.

2.3.2. Submit, through their MAJCOM and/or wing, requests for baseline ATCALs evaluations when it is determined that detailed documentation of system's performance is needed.

2.3.3. Coordinate directly with AFFSA/XVE and their MAJCOM to establish exact dates for scheduled evaluations. Factors to consider in the scheduling are: operational requirements, evaluation team availability, and any conflicting situations (runway construction, MDM, exercises, etc.).

2.3.4. Ensure that all equipment scheduled for a baseline evaluation is operational and performing in accordance with Technical Order (TO) specifications prior to the arrival of the evaluation team. Equipment not operating within TO specifications is not ready for evaluation unless a special evaluation is being conducted to determine the cause of the out-of-tolerance condition(s).

2.3.5. Ensure that journeyman or craftsman level maintenance technicians are available during the evaluation. These technicians must be available to work varying shifts and weekends to ensure timely completion of the scheduled evaluation. The work schedule is included in the notification letter.

2.3.6. Provide administrative support to enable transmittal of ATCALS evaluation team arrival, status, and departure messages.

2.3.7. Take appropriate action to correct deficiencies discovered during the evaluation.

2.3.8. Respond to HQ AFFSA/XVE notification letter not later than 30 calendar days prior to the start date. Send an information copy to the MAJCOM and/or wing.

2.3.8.1. Arrange for equipment downtime required for the evaluation as requested in the notification letter from HQ AFFSA/XVE.

2.3.8.2. Ensure the MAJCOM and/or wing concurs with the evaluation schedule before arrival of the evaluation team.

2.3.8.3. Immediately notify the evaluation branch and the appropriate MAJCOM when a problem is discovered that will delay the start of the scheduled evaluation or have a serious impact on the outcome of the evaluation.

2.4. HQ AFFSA/XVE:

2.4.1. Perform ATCALS evaluation. The evaluation will normally be scheduled around flying hours to minimize mission impact. Evaluation team will work shifts and weekends as needed to maximize the evaluation effort.

2.4.2. Provide evaluation support, as ATCALS experts, to Development Test and Evaluation (DT&E) and Operational Test and Evaluation (OT&E) activities as needed.

2.4.3. Establish agreements with the Federal Aviation Administration (FAA) for flight inspection support, as necessary and consistent with other priorities.

2.4.4. Forward a notification letter or message to communications units prior to an evaluation.

2.4.5. Make waiver recommendations per 5.paragraph 5 (Waivers) of this instruction.

2.4.6. Publish and distribute all evaluation reports within 90 calendar days following evaluation completion.

2.4.7. Provide expertise for procedures and forms development to Engineering and Installation (E&I) and Operation and Maintenance (O&M) activities for the purpose of developing acceptance test procedures.

3. Special Augmented Evaluation. Coordinated efforts to investigate common ATCALS deficiencies are often more productive than those done by one organization because of special knowledge, skills, and experience. Any organization can propose special augmented evaluations for any ATCALS-related deficiency. HQ AFFSA/XVE will receive evaluation requests, coordinate with applicable ATCALS branches and, if appropriate, augment an organization with a Test Plan Working Group (TPWG). The TPWG will review the problem, develop a test plan, select a test director, select a test site, plan a schedule, assign tests as needed, and determine team members to correct common problems. The TPWG may meet in person, but its objectives can usually be handled by correspondence.

4. Scheduling. HQ AFFSA/XVE will develop and distribute an annual evaluations schedule. This schedule will be based on a HQ AFFSA/XVE developed priority (**Attachment 2**, ATCALs Evaluation Selection Criteria) list which results from inputs from the MAJCOMs and units. The evaluation branch coordinates with the affected communications unit and FAA to establish a schedule which considers evaluation branch team availability, flight support availability, flying mission issues, weather conditions, and other activities that would affect evaluation dates. Changes to the schedule will occur as special requests are received by HQ AFFSA/XVE, their relative priority determined, and taskings to the evaluation branch are made. This may result in deletions of lower priority evaluations from the schedule.

5. Waivers. Evaluation teams are required, as part of the evaluation effort, to determine the optimum configuration of the equipment they evaluate. At times, the optimum configuration may only be achieved by adjusting some equipment parameters out of TO specifications. If this situation occurs, the evaluation team will thoroughly document the condition and result obtained, as well as, restore the facility to TO specifications before departing the site. If deemed necessary, the evaluation team will recommend specific waivers as part of the evaluation report. If a waiver is required, the evaluated unit will submit a request for waiver per established procedures.

6. Classification. Evaluation reports will normally be unclassified. When classification is required, classify data gathered and reports prepared under the ATCALs evaluation program per AFI 31-401, *Information Security Management Program*, and other applicable directives. Any information criticizing the performance of a particular manufacturer's equipment may be proprietary. Mark such information "For Official Use Only" and handle accordingly.

7. Disposition of Reports. Disposition of ATCALs evaluation reports are covered by AFI 37-138, *Records Disposition--Procedures and Responsibilities*.

RALPH E. EBERHART, Lt General, USAF
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Attachment 1

GLOSSARY OF REFERENCES, ABBREVIATIONS, ACRONYMS, AND TERMS

References

NOTE:

When a former designation is given, i.e., "formerly AFR 4-20," that denotes the successor publication has not yet been published as of the date of this glossary. This glossary indicates the new designation and title.

Air Force Instruction (AFI) 31-401, *Information Security Program Regulation* (formerly AFR 205-1)

Air Force Instruction (AFI) 37-138, *Records Disposition--Procedures and Responsibilities*, March 1994

Air Force Instruction (AFI) 63-101, *Acquisition System*, May 1994

Air Force Instruction (AFI) 99-102, *Management of Operational Test and Evaluation*, June 1990

Abbreviations and Acronyms

AFFSA—Air Force Flight Standards Agency

AFI—Air Force Instruction

ATC—Air Traffic Control

ATCALs—Air Traffic Control and Landing Systems

DoD—Department of Defense

DRU—Direct Reporting Unit

DT&E—Development, Test, and Evaluation

E&I—Engineering and Installation

EOI—Evaluation Operating Instruction

FAA—Federal Aviation Administration

ICR—Information Collection and Reports

MAJCOM—Major Command

MDM—Mobile Depot Maintenance

NAVAIDS—Navigational Aids

NOTAM—Notice to Airmen

O&M—Operation and Maintenance

OT&E—Operational Test and Evaluation

QC—Quality Control

PMD—Program Management Directive

RCS—Report Control Symbol

SC—Communications Support

SMT—Special Maintenance Team

TEMP—Test and Evaluation Master Plan

TO—Technical Order

TPO—Test Program Outline

TPWG—Test Plan Working Group

XVE—Air Traffic Control and Landing Systems Evaluation Division of AFFSA

Terms

Acceptance Tests—These are tests performed by the installers and the unit QC function to assure that the system is installed properly and performs according to TO specifications.

ATCALs—This term includes a large group of interrelated equipment associated with ATC facilities. As used herein, ATCALs applies to ATC NAVAIDS, radars, and communications equipment. This equipment is both airborne and ground, fixed and mobile, and is used by the Air Force to manage air traffic in the worldwide military and civil aviation environment.

Baseline Evaluation—This type of evaluation defines the operational capabilities and limitations of the facility. A baseline evaluation is documented in a formal report which includes analysis of any anomalies or deficiencies and includes recommendations for optimum performance consistent with its assigned mission and operating environment. These evaluations are not repeated unless there is a significant change in siting conditions or equipment configurations. Baseline evaluations are conducted on the more complex systems or on those that are most critical. Baseline evaluations will result from a priority list established by MAJCOMs and HQ AFFSA.

Continuous Evaluation—Evaluations conducted by the responsible O&M unit based on performance standards established in ATCALs evaluation reports or commissioning flight inspection data. This evaluation is periodic or continuous and is designed to assure that performance of the systems does not deteriorate beyond acceptable limits.

Evaluation Branch—The evaluation branch is the branch of the ATCALs Evaluation Division (HQ AFFSA/XVE) responsible for performing evaluations on a particular ATCALs. HQ AFFSA/XVE has evaluation branches for ATC Radar Systems, ATC Communications Systems, and ATC Navigational Aids.

Optimization—Actions that result in a facility providing improved performance even though TO specifications are being met. For instance, adjusting radar antenna tilt to provide coverage at a particular altitude or installing a radar screen to overcome undesired clutter.

Special Evaluation—A special evaluation is documented in a formal report and is conducted to accomplish specific objectives, such as:

- Update a baseline evaluation.
- Solve or identify cause of a specific problem that is beyond the capability of the responsible unit.
- Accomplish other projects as requested. This may include evaluations conducted to investigate, solve, and document ATCALs problems of common concern to various support functions. These evaluations may be conducted for other DoD agencies. The evaluation may be conducted exclu-

sively by the evaluation branch or augmented by individuals from other activities (MAJCOMs or units) based on their particular specialty or closeness to the problem being investigated. In this case, the evaluation branch will function as the experts in test direction and report documentation. Requests for these augmented special evaluations may be initiated by any branch in HQ AFFSA/XVE or the MAJCOMs.

Attachment 2

ATCALs EVALUATION SELECTION CRITERIA

Priority 1. Immediate Mission Impact

- a. Special-facility off the air (failed flight check)
- b. Special-on the air but restrictions imposed (coverage limited, unacceptable approaches, radar holes, etc.).

Priority 2. Mission Impact

- a. Special-to investigate a generic problem of value to other like systems.
- b. Special-meeting operational requirements, but anticipate deterioration (high vegetation growth rate causing signal blockage).
- c. Baseline-newly installed critical ATCALs with extraordinary mission requirements or unique siting terrain which puts in question its capabilities and limitations.
- d. Baseline-all newly installed fixed ATC radar facilities.
- e. Baseline-previously installed fixed ATC radar facilities.
- f. Baseline-previously installed fixed NAVAIDS and communications facilities.

Priority 3. Possible Future Mission Impact

- a. Special-to update a baseline
- b. Special or Baseline-non critical facilities, beacon, pilot to forecaster, etc.
- c. Special-projected installment of fixed ATC radar, NAVAIDS, and communications facilities.

NOTE: Other issues such as a unique or severe mission impact or sensitive political situations may result in deviation of evaluation priorities.